will hereafter equalise this disparity. The parcel post, however, is at present discontinued.

P. N. Row

October 14

Science and the Government

The reason that the Government has refused to aid "the expedition to observe the approaching eclipse" is, that it is perfectly assured that "men of science and culture" are nothing but a set of lying impostors, and would swindle the public out of thousands of pounds to take an observation which might be done for 10*l*. and much less. The nation is fast beginning to perceive that astronomy is a monstrous cheat—and the Transit of Venus has no more to do with the distance of the sun than it has with the number of fingers on my hand.

John Hampden

[We congratulate Mr. Lowe on his ally, merely remarking that the same Government which has refused the Eclipse Expedition has granted 20,000*l*. for observations of the Transit of Venus. Perhaps Mr. Hampden can explain the cause of this inconsistency on the part of the Government.—Ed.]

Insects upon a Swallow

G. H. H. mentions in Nature of Sept. 22 his having found on a swallow in the month of August two slate-coloured insects. On the 15th of July last, when hauling a seine net in Studland Bay, near Poole, with some fellow members of the Linnean Society Club, I picked up at the foot of the low cliff a young sand-martin, which had seven of these parasites (*Ixodes plumbea*) affixed to the skin of the head, giving it the appearance of having a slate-coloured fleshy crest. The poor little bird exhibited the symptoms described by your correspondent. I found it panting and apparently exhausted on the ground, and it remained stationary without making any effort to escape. The fishermen of our crew informed me that they often pick up martins with these ticks adhering to them.

The Waldrons, Croydon, Sept. 26 Henry Lee

Aurora Borealis

A fine aurora was observed here on the evening of the 14th inst., between $8^h\,30^m$ and $9^h\,40^m$, which, in spite of bright moonlight, nearly equalled the splendour the display of September the 24th. During the early part of the evening the eastern quarter of the sky was covered with bands of light *cirri*, which had a general direction of E.N.E. to W.S.W., or nearly at right-angles to the magnetic meridian; it was among these clouds and in the N.E. that the beams of the aurora were first seen. At $9^h\,0^m$ a magnificent rose-coloured ray was noticed in the N.N.W., extending from the horizon through *Vega* towards the zenith. The three stars, ζ, ϵ, and δ, of Ursa Major were for more than ten minutes enveloped in the crimson glow of the aurora.

Bedford, Oct. 18 Thos. G. Elger

NOTES

We are glad to be able to state that Dr. Wyville Thomson has entirely recovered from the attack of gastric fever which prevented his taking part in the *Porcupine* expedition this summer. He is at present going over the zoological collection brought home in that vessel, at the University of London, with Dr. Carpenter, and he reports some very remarkable additions to his new group of vitreous sponges, mainly from the coast of Spain and Portugal. These, with some others procured by Mr. Saville Kent, in Dr. Marshall Hall's yacht, will nearly double the number of known forms referred to the order. They are no pigmies. One of them forms a lovely lace-like vase upwards of three feet in diameter at the lip!

We have to add to the list of candidates for the Regius Professorship of Natural History in Edinburgh the name of John Anderson, M.D. Edin., F.L.S., director of the Imperial Museum of Natural History, Calcutta. Dr. Anderson was attached as Naturalist to a recent expedition through the north of Burmah, and he is, we understand, now on his way home, bringing with him detailed accounts of the important additions which he is known to have made to science in that expedition.

Members of the University of Cambridge, and all who are interested in the study of physical science, will hear with pleasure of the munificent offer made to the University by its Chancellor, the Duke of Devonshire, contained in the following extract of a letter to the Vice-Chancellor:—"I find in the report, dated Feb. 29, 1869, (*sic*) of the Physical Science Syndicate, recommending the establishment of a Professor and Demonstrator of Experimental Physics, that the buildings and apparatus required for this department of science are estimated to cost 6,300*l*. I am desirous to assist the University in carrying this recommendation into effect, and shall accordingly be prepared to provide the funds required for the building and apparatus, so soon as the University shall have in other respects completed its arrangements for teaching experimental physics, and shall have approved the plan of the building."

At the Commencement held on the 12th inst. of the Queen's University in Ireland, the Most Honourable the Marquis of Kildare, the newly-appointed Chancellor of the University, presided. After expressing the deep regret of the University at the death of their first Chancellor, the Earl of Clarendon, to whom the University and Colleges were indebted for much of their prosperity, the Chancellor mentioned that the Senate had decided to establish a special curriculum, in which science should have the predominance, and that the degrees of Bachelor and Doctor in Science would be given to those who passed the examinations in the subjects to be hereafter enumerated. He also referred to the examinations for women carried on by the University—the first of these was held in June last in Belfast and Galway—and mentioned that of thirty-three candidates who presented themselves, twenty-one acquitted themselves to the satisfaction of the examiners.

Mr. M. R. Pryor has been elected to a Fellowship of Natural Science in Trinity College, Cambridge. The examination was conducted by Prof. Liveing, Prof. Michael Foster (the new Prælector of the College), Mr. Trotter, and Mr. Hort, Fellows of the College, was open to all the University, and was on a par with the examinations in classics and mathematics, held at the same time for Fellowships. It is the first occasion that this has been done, and the first time that a Fellowship has been offered in Cambridge for competition in Natural Science. We sincerely trust the plan will be continued in Trinity, and that the example will be followed in other Colleges. It would probably contribute more than any other single thing to promote the study of Natural Science in the University, and give an impetus to it in the various schools throughout the kingdom. We sometimes think the Colleges are scarcely conscious of the power they are capable of exercising in this way, and of the responsibility which necessarily attaches to such power. The questions were of a very high order, and we understand the answers evinced so much power as well as knowledge, that the examiners would gladly have elected more than one candidate. We sincerely congratulate Mr. Pryor on having thus worthily won the highest competitive reward for Natural Science hitherto given in this country.

The Senate of the Queen's University in Ireland has conferred on William King, M.D., Professor of Geology and Mineralogy in Queen's College, Galway, the honorary degree of Doctor of Science, in consideration of his eminence as a geologist.

The following lectures in Natural Sciences will be delivered in Trinity and St. John's Colleges, Cambridge, during the Michaelmas term, 1870. On Electricity: Mr. Trotter, Trinity. On Chemistry: Mr. Main, St. John's. Instruction in Practical Chemistry will also be given. On Geology—(1) Palæontology; (2) Lyell's Principles of Geology; (3) Elementary Lectures: Mr. Bonney, St. John's. (Students of other Colleges can be admitted to these Lectures by arrangement with their college tutor.) On Elementary Botany: Mr. Trotter, Trinity. On Physiology: The Trinity Prælector of Physiology (Dr. M. Foster) at the New Museums.

MERTON COLLEGE, Oxford, announces an open Natural Science scholarship of the value of 80*l.* for five years, and one or more exhibitions of the value of 25*l.* for three years, to be awarded in December next. The examination will be in chemistry, physics, and physiology, and an opportunity will be given for showing a knowledge of practical work in chemistry and physiology. They will be awarded either for special excellence in one subject or for excellence in two out of three subjects, but no candidate will be examined in more than two subjects. There is no limit to age, but members of the University must not be over six terms standing.

THE Natural Science Scholarship at Lincoln College, Oxford, has been awarded to Mr. Schofield, of Owens College, Manchester. The National Science Demyship of 80*l.* a year at Magdalen College, Oxford, has not been filled up, there being no candidate up to the required standard.

THE Dublin University have just published the regulations for the examinations for women for 1871. They will be held in Dublin in March 1871, one for senior and one for junior candidates. The latter must not be above eighteen years of age. Examinations will also be held at any place where a ladies' superintending committee shall be constituted, and at least twenty candidates guaranteed to present themselves.

WE understand that Dr. Schimper, the palæontologist, escaped from Strasburg the day before the final closing of the gates at the commencement of the siege. Fears are entertained as to the safety of his fine collection.

IN addition to the literary prospects of the approaching season already announced, Mr. Murray's list of forthcoming books includes the following:—"On the Descent of Man, and on Selection in Relation to Sex," by Charles Darwin; with illustrations, 2 vols. crown 8vo. "The Student's Elements of Geology," by Sir Charles Lyell; with numerous woodcuts, post 8vo. "Scrambles among the Alps, 1860–69," by Edward Whymper, including the First Ascent of the Matterhorn, with Observations on Glacier Phenomena in the Alps and in Greenland; with 100 maps and illustrations, medium 8vo. "A Visit to High Tartary, Yarkand, and Kashgar (formerly Chinese Tartary), and Return Journey over the Karakorum Pass," by Robert Shaw; with map and illustrations, 8vo. Second and cheaper edition of "The Music of the Most Ancient Nations," by Carl Engel; with 100 illustrations, 8vo. A third edition of Kerr's "The Gentleman's House; or, How to Plan English Residences, from the Parsonage to the Palace;" with illustrations, 8vo. Among Mr. Bentley's announcements are—"Travels in the Air; a Popular Account of Balloon Voyages and Ventures, with recent attempts to accomplish the navigation of the air," by J. Glaisher, of the Royal Observatory, Greenwich; royal 8vo., with 133 illustrations. "The Marvels of the Heavens," from the French of Flammarion, translated by Mrs. Lockyer; crown 8vo., with numerous illustrations. A new and cheaper edition of "The Heavens," an illustrated handbook of Popular Astronomy, by Amédée Guillemin, edited by J. N. Lockyer, F.R.S.; demy 8vo., with 200 illustrations.

MR. M. C. COOKE'S Hand-book of British Fungi will be published in the course of the ensuing season by Messrs. Macmillan and Co. Although the first volume is already printed, its issue will be delayed until the whole work is ready. It will be a complete *vade mecum* for the British Fungologist, and will contain descriptions of all the species, and illustrations of all the genera. We are glad to see that the University of St. Lawrence has recognised Mr. Cooke's services to botanical science by conferring on him the honorary degree of M.A.

MR. VAN VOORST has in preparation "The Mollusca of the European seas," by Mr. Gwyn Jeffreys, F.R.S., in continuation of his work on "British Conchology."

AN English edition of M. Taine's "De l'Intelligence," revised with additions by the author, is in preparation, and will shortly be published by L. Reeve and Co.

WE have received a prospectus of a very energetic society located in the north of London, called the Hackney Scientific Association, which is now commencing its fourth session. It numbers among its officers many men of high scientific standing, and the following is its programme of papers for the season:—Recent Progress in Astronomy—W. T. Lynn; Comets—Henry T. Vivian; Observations on Solar Eclipses—William J. Dyer; Water—C. W. Stidstone; The Predicted and Observed Meteorology of 1870, and the Probable Weather for 1871—Frederic Pratt; A Catalogue of variable Stars, with Remarks upon their Physical Constitution—Albert P. Holden; The Calendar—Henry T. Vivian; The Methods used in endeavouring to determine Man's Antiquity—William H. Davis; Infusoria—William West; The Diseases prevalent in certain Geological Formations—H. W. Emons; Micro-Photography—C. W. Stidstone; The Habitable Condition of other Worlds, as affected by Temperature—Frederic Pratt; The Origin and Constitution of the Minor Planets, called Asteroids—Albert P. Holden; Inorganic Chemistry—George C. Fearn.

WE are glad to find in the number of our able contemporary, the *Academy*, for October, an extension of the scientific department. The paper will be published in future regularly on the 15th, instead of the second Saturday in each month.

WE learn from the *American Entomologist and Botanist* that the botanists of New York have formed themselves into a club, named, after one of the most distinguished botanists of America, the Torrey Club. The club publishes a monthly *Bulletin*, the object of which is "to form a medium of communication for all those interested in the flora of this vicinity, and thus to bring together and fan into a flame the sparks of botanical enthusiasm at present too much isolated." It is many years since a similar botanical club or society has existed in London.

MR. G. P. BIDDER has written to the *Times* describing a remarkable example of parhelia or mock suns observed by him on the 7th inst. at Canterbury:—"A portion of a circular arc was seen considerably above the halo and convex to it and the sun. The centre of the circle of which it formed part was, as nearly as I could estimate, close to the zenith. This arc had all the prismatic colours pure and distinct, and about 80° or 90° of it were visible. The following rough approximation represents the general arrangement of the whole: Altitude of the sun, about 12°; radius of the halo, about 25°; interval between the nearest points of halo and rainbow arc, about 25°; radius of rainbow arc, about 25°."

THE new buildings of the Taunton College School were formally opened during the past week. After a sermon from the bishop of the diocese and the inevitable luncheon, some very good speeches were made, among which we may especially mention those of the head-master, Rev. W. Tuckwell, Mr. J. G. Fitch, and Mr. E. B. Tylor. Mr. Tuckwell thus announced the programme of the system of instruction given at the school: "I may be allowed to say one word upon the nature of the education which we are striving to carry out, because to this is chiefly due the impulse in our favour which has so greatly altered our position. All who have been concerned with us are aware that in our curriculum we have departed widely from the ancient systems. We refuse to restrict our boys, as my own contemporaries were restricted, to the exclusive study of Greek and Latin; but while we give to these only a portion of our time, and find room for the higher mathematics, for physical science, for geography and history, for French and German, and for a careful study of English literature and language, we assert that by improved methods, by dexterous timing, and by greatly increased personal labour, we teach these new subjects thoroughly, and by no means neglect the old ones."

Engineering records the death, on the 16th inst., at New York, of Mr. Thomas Ewbank, the well-known writer on hydraulics. He was born at Barnard Castle, England, in 1792, and, after being apprenticed to a tin and coppersmith, came to London, where he spent all his spare time in scientific study. In 1819, being then a member of several learned societies, he emigrated to New York, where he was engaged for seventeen years in business as a manufacturer of lead, tin, and copper tubing, which occupation he relinquished in 1836 for purely scientific work. Besides contributions to scientific journals, and labours on various Government scientific committees, Mr. Ewbank was the author of "A Descriptive and Historical Account of Hydraulic and other Machines for Raising Water, both Ancient and Modern;" "The World a Workshop, or the Physical Relation of Man to the Earth;" "Life in Brazil, or the Land of the Cocoa and the Palm;" and numerous smaller publications.

THE United States steamer *Kansas*, now fitting out at the Washington Navy Yard for duty on the Tehuantepec and Nicaragua Expedition, was, according to *Engineering*, put in commission about a fortnight ago. The *Kansas* will be the principal vessel of the expedition. The survey in Nicaragua will embrace the route for a canal advocated thirty years ago by the Emperor Napoleon. That in Mexico by the Tehuantepec river possesses less interest, owing to the length and difficulties of the route.

THE first quarterly number of the *Journal of the Iron and Steel Institute* is announced to appear with the new year.

MR. ADOLPH HUBNER read an interesting and valuable paper on scientific observation in the interior of Port Natal, at a meeting of the Natural History Association of that colony on the 20th of August.

ON the 8th August Mr. S. Vincent Erskine read a paper before the Natal Natural History Society—Mr. John Robinson in the chair—on the Tsetse Fly. Mr. Erskine severely criticised Dr. Livingstone's statements, and denied that the fly was destructive to the life of the ox, horse, or dog. He affirmed that death was to be attributed more to change of grass or climate. The same evening Mr. Morant read a paper on the Entomology of the Free State and the Trans Vaal, particularly with regard to the butterflies.

THE expedition of Yale College students, under the leadership of Prof. O. E. Marsh, to which we referred last week, spent several months in the Rocky Mountain regions, investigating its flora and fauna, and collecting for the Yale Museum as fine collections as possible of the extinct animal remains found in such abundance in the tertiaries and cretaceous deposits of Nebraska, Dakota, and Wyoming. Leaving this region they will visit California, and after investigating the geology of the Pacific coast, will return through Colorado and Kansas, reaching New Haven, if possible, in November.

COCOA

COCOA is a valuable article of food that is becoming more and more in use in this country, and judging from the increased importations during the past three or four years, and the constant average of the coffee imports during the same period, it seems that cocoa is, in a measure, displacing coffee as a popular beverage.

The plant producing the cocoa of commerce is a tree seldom growing to a greater height than 17 or 18 feet. It is known to botanists as *Theobroma Cacao*. It bears an oblong fruit, ribbed longitudinally, measuring from six to ten inches in length and four to five inches across, and, when ripe, is of a yellow colour, changing to brown in drying.

It contains from fifty to one hundred seeds, and these seeds, after being washed, thoroughly dried in the sun, and roasted, form the cocoa-nibs of commerce.

Linnæus must have had a high appreciation of cocoa when he gave to the genus the name Theobroma, which is derived from *theos*, god, and *broma*, food, signifying it as food fit for a god. Cocoa contains a large amount of nutritive matter. In this respect it differs in a marked degree from tea and coffee; for while they are taken only in infusion and are used as refreshing beverages, cocoa is usually taken more in substance, and, as such, may be considered both as food and drink.

It was used in very early times in Mexico, whence it was introduced by the Spaniards into Europe about 1520. Humboldt tells us that it was extensively cultivated in the time of Montezuma, and the seeds were commonly used as money by the Aztecs. At the present time the cocoa-tree is largely grown in the West Indies, more especially in Trinidad, and over a great part of tropical America. Numerous varieties of the cocoa tree exist, some producing longer, or broader and some thinner or thicker skinned fruits, others producing larger, longer, or broader seeds, as the case may be. The seeds also vary in quality, according to the variety producing them or the place of their growth: thus Caraccas and Trinidad seeds are considered the finest, and some manufacturers use the names of the best districts as a recommendation to their wares.

The seeds are brought into this country in a dried state, and are roasted in revolving metal cylinders, the heat causes them to shrivel slightly so that the husks or skins are left loose and are removed by fanning. It is said that large quantities of these husks are imported from Italy under the name of "Miserable," and are used in Ireland by the poorer classes. The roasted seeds, after the husks are removed, are known as cocoa-nibs, but they are never seen in commerce in their whole form. The seed naturally divides by its two cotyledons, and in the process of winnowing each cotyledon gets broken into two or more pieces. To obtain the nibs and boil them in the old-fashioned way is certainly the surest way of getting genuine cocoa.

Some trouble, however, attends the preparation of the beverage in this form, the nibs requiring to be boiled an hour or two to extract their valuable properties. To obviate this, and to supply the public with a more convenient article, powdered cocoas, which require simply mixing with cold milk, boiling water being afterwards added, were introduced. These prepared cocoas opened a wide field for wholesale adulteration, the public, by using them, sacrificing purity for convenience in the preparation for the table.

These powdered cocoas are "prepared" by reducing the seeds to a fine paste by grinding them under heavy heated rollers—starch, flour, sugar, molasses, and, in the cheaper kinds, other ingredients less wholesome being added; after which, the whole mass is reduced to powder, packed in different forms, and sold under various trade terms, such as "Homœopathic Cocoa," "Soluble Cocoa," &c. Each manufacturer's individual preparation varies perhaps in flavour, according to the proportion or character of the ingredients added. The numerous forms of cake chocolate are prepared in the same way, vanilla being largely used in the flavouring, and the pasty mass being pressed into moulds instead of being reduced to powder. Rock cocoa and Flake cocoa are likewise prepared in a similar way, but are not so highly flavoured.

Few articles are more liable to adulteration than cocoa; and so many forms or qualities are known in trade, varying in price from 6*d.* up to 4*s.* per lb., that it is not surprising that in the cheapest forms the adulterants themselves should be